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State of California AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-3-1

Relating to Certification of New Heavy-Duty Off-Road Equipment Engines

VOLVO CONSTRUCTION EQUIPMENT, VOLVO AB

Pursuant to the authority vested in the Air Resources Board by Sections 43000.5, 43013 and 43018 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the following Volvo Construction Equipment, Volvo AB 1996 model-year engine, with rated power between 175 and 750 horsepower, and exhaust emission control systems are certified as described below for use in heavy-duty off-road equipment:

Typical Equipment Usage: Excavators, Haulers, Loaders

Fuel Type: Diesel

Engine Family	Liters	(Cubic Inches)	Exhaust Emission Control Systems and Special Features
TVS12.R6DARA (TD122)	12.0	(730)	Turbocharger Charge Air Cooler Smoke Puff Limiter

Engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The total hydrocarbons (THC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matters (PM) certification exhaust emission standards, in grams per brake horsepower-hour (g/bhp-hr), and the opacity of smoke emission standards, in percent (%), during acceleration (Accel), lugging (Lug), and peak (Peak) modes, for this engine family are (Title 13, California Code of Regulations, Section 2423):

<u> </u>	<u>ust Emissi</u>	ons (q/bhp	-hr)	Smoke	<u>Opacity</u>	(%)
<u>THC</u>	<u>co</u>	<u>NOx</u>	<u>PM</u>	<u>Accel</u>	<u>Lug</u>	<u>Peak</u>
1.0	8.5	6.9	0.4	20	15	50

The THC, CO, NOx and PM exhaust emission certification values, in g/bhp-hr, and the opacity of smoke emission certification values, in percent (%), for this engine family are:

	Exhaust Emission (g/bhp-hr)			Smoke Opacity (%)			
Engine Family	THC	<u>co</u> _	<u>NO×</u>	<u>PM</u>	<u>Accel</u>	Lug	<u>Peak</u>
TVS12.R6DARA (TD122)	0.2	0.6	6.6	0.1	6	0	18

BE IT FURTHER RESOLVED: That the listed engine models comply with the "Exhaust Emission Standards and Test Procedures--Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2423) for the aforementioned model year.

BE IT FURTHER RESOLVED: That the listed engine models also comply with the "Emission Control Labels--1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the materials to demonstrate certification compliance with the Board's emission control system warranty provisions (Title 13, California Code of Regulations, Section 2425 et seq.).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

Executed at El Monte, California this 3^M

R. B. Summerfield

Assistant División Chief Mobile Source Division

day of January 1996.

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199_6 AIR RESOURCES BOARD SUPPLEMENTAL DATA SHEET HEAVY-DUTY OFF-ROAD DIESEL ENGINES

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Manufacturer <u>V(</u>	OLVO CONSTRUCT	TION EQUIPMENT,	<u>VOLVO A</u> B Engi	ne Family <u>T</u>	/S12.R6DARA	
Displacement:	12.0/	<u>′ 730 L</u>	iters/Cubic In	iches Eng	Config: I	-6
All Codes in	Eng Fam: CA	49S 50S_3	<u>XX</u> Cert	: Test Proced	ures: ARB_	EPA <u>XX</u>
Valves/Ports	per Cylinder	2	_ Stro	kes per Comb	ustion Cycl	e <u>4-STROKE</u>
Maximum Rated	Power:3	398	_HP (<u>297</u>	KW)	@ <u>21</u>	.00RPM
Ignition: Co	mpression <u>XX</u>	Comp	ression with G	low Plug		Spark
		Flex-Fuel				
	CNG LN	NG LPG	Other (spe	ecify)		
Diesel Cert F	uel: 40 CFR 8	36.1313-94 <u>XX</u>	Other (spe	ecify)		
Primary Servi	ce Equipment:	<u>Excavators</u> , L	<u>oaders, Hauler</u>	^s		
Exhaust ECS (e.g., MFI, TC,	, CAC): <u>SPL,</u>	TC, CAC	Same new CAF	31020 TING	121
			(use abbreviat	Lions per SAE		
Engine Model (Eng Code)	Rated HP @ RPM	Fuel Rate @ ₃ Rated HP mm ³ / stroke (lbs/hr)	Fuel Pump & Injector Part No.	ECM/PCM Part No.	EGR Valve Part No.	PTOX / Catalytic Converter Part No.
TD122 KIE (I)	381 @ 2100	229 (190.8)	11031889 499288			
TD122 KFE (II)	398 @ 2100	212 (176.7)	499168			
TD122 KAE (III)	328 @ 2100	171 (142.5)	499189			
TD122 KHE (IV)	283 @ 2100	166 (138.4)	499167			
TD122 KKE (V)	318 @ 2100	205 (170.8)	499289			
Date Issued: Revisions:	I	1	ţ	ı		I